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A LARGE TERN COLONY IN TEXAS

By J. R. PEMBERTON

WITH ELEVEN PHOTOS

DURING the first two weeks of May, 1921, while working the country between Brownsville and Point Isabel, Cameron County, Texas, and the shores of the many lagoons near Point Isabel, and also on a trip to Green Island, I was constantly wondering where the great numbers of terns which were nearly always in view could be nesting. It was not until May 14, when I was working about eight miles west of Point Isabel, that I found the place. I was searching for nests of the Long-billed Curlew in the grassy meadows adjoining the sloughs and salt-water covered areas of this delta country of the Rio Grande River. I noticed both Gull-billed and Common terns were fishing in the waters; but it was not for some time that it finally dawned on me that they were carrying the fish away with them instead of eating them on the spot. This, of course, was news, so I ascended an eminence of perhaps twenty feet elevation and watched the terns. They all flew straight away toward the center of a very large body of water called the Bahia Grande, and using my glass I saw a low flat island and hovering over it in several places a shimmering, fluttering, white mass which meant only one thing—there was the center of operations of the terns.

I judged from experience that the mile or so of water which separates the mainland from the island would not be deeper than three feet, but in order to carry some cameras I got a small boat and made my first visit on May 16 in company with a Mexican fisherman. On that trip, by constant soundings, I found that the water's depth was never greater than two feet, so my next trip on May 23 was made by wading across. Mr. A. J. Kirn accompanied me on the second trip. R. D. Camp, who is both Federal and State Game Warden in that district, made a trip with Mr. Robert Runyon on June 5. The remarks on each of the breeding species which follow are drawn from notes made on all three of the trips.

Now, a large tern colony may be an old story to some of our fraternity, but I am sure that the vast majority would have been as interested as I was upon first seeing many thousands of terns belonging to seven different species rise from their nests. That matter of the seven species is important—here was a

chance to note the habits of each and compare them on the spot with one another instead of after, as in some cases, years of elapsed time. Also a collector of eggs had here a wonderful opportunity to acquire a representative series showing the maximum variations in color, shape, size and markings in thousands of eggs. For the photographer with sufficient time and apparatus the opportunities were legion.

The breeding grounds turned out to be on three separate islands. To the west is a true island of about ten acres extent and rising to a height of twenty feet above the water level. A bluff forms its southeastern side and the top slopes northwestward into the water. The prevailing winds are from the southeast, so that this island has well-sheltered north and northwest shores. East of this island a distance of a half-mile are two shoals of dried mud fairly well covered with salt grass and some associated shrubs. These two shoals are of about twenty acres extent each, and they do not rise out of the water at any place more than a scant foot. Both have an irregular outline, and the north-



Fig. 14. NEST AND NEWLY HATCHED YOUNG OF THE GULL-BILLED TERN. CAMERON COUNTY, TEXAS.

Photo by Robert Runyon.

ernmost of the two has an encroaching embayment which occupies a part of the center.

It was the southernmost of the two mud shoals which was first visited. As it was approached in a small boat the white cloud above resolved itself into birds. As the landing was made and we stood up in the boat an almost unbelievable number of terns rose from the grass and joined those already in the air. The din and shrieks, made in great part close to one's head, rendered conversation practically impossible. The air was full of flying terns. But this effervescent demonstration soon blew its head off and a large part of the birds settled back upon their eggs. It was a hot afternoon, the sun glaring down from a cloudless sky and glaring up from the salt crystals in the mud. As we walked, or rather waded in the mud, for the crust was not strong enough to support us, across a bare area toward the grassy zone, we had to pick our way carefully in order not to smash eggs underfoot. Nests seemed everywhere.

Even a casual glance into the air or an analysis of the sounds coming out of it showed one that there were several species of terns present. A careful check showed eight species, and this number was not changed subsequently. They were, in order of abundance, the Gull-billed (*Gelochelidon nilotica*), Common (*Sterna hirundo*), Least (*Sterna antillarum*), Caspian (*Sterna caspia*), Royal (*Sterna marima*), Black (*Hydrochelidon nigra surinamensis*), Cabot (*Sterna sandvicensis acuflavida*), and Forster (*Sterna forsteri*). We found them later to be all breeding with the exception of the Black Tern, which was evidently a tardy migrant, loath to leave these "happy hunting grounds" for the north.

The Gull-billed Tern was far and away the most numerous, and I hesitate to estimate the population. Remembering my Green Island experience with the Reddish Egrets I would certainly say that this tern was present in double or possibly treble the number of the Egrets at Green Island. It would certainly be many thousand, and apparently all were breeding. We later found that



Fig. 15. NEST AND EGGS OF COMMON TERN. CAMERON COUNTY, TEXAS.

Photo by Robert Runyon.

this species occupied all three islands and was the only one which did so. On May 16, breeding was at its height. Building had finished and all nests contained either eggs or young.

The nests varied in architecture greatly. Some consisted of a mere cleared spot surrounded by a rim of broken bits of shells, dry mud, and fragments of salt grass stems. Others were considerable piles of grass and mud, well dished at the top, and partly lined with finer salt grass. In a few of the latter class the rim was ornamented with bits of shell. On the western island the nests were arranged in more or less of a row, following the high water limit; but on the mud shoals they were placed apparently at random, some amid the grass and others in the bare spots. Full sets of eggs consisted of two or three, no sets of four being found. The degree of incubation varied from perfectly fresh eggs to eggs which were visibly hatching. On the 15th all young were in the downy stage and were colored a dull tan which harmonized closely with

the earth and rendered them very inconspicuous when not moving. Many of them hit for sea as we came near them and swam some distance away from shore. In many nests were found freshly caught fish, but whether destined for the brooding birds or the soon-to-be-hatched young was not apparent. There were many dead young and some were seen killed by the Caspian Terns, who were doubtless furious at our intrusion into their homes. On May 23 more young were in evidence and many were in their pin feathers, much more spry and wary, running without falling, and swimming with ease.

The Gull-billed Tern is extremely vociferous when its nest is approached, but not nearly so much so as is the Common Tern. The latter is quite pugnacious and its voice is sharper, shriller and more nervous in its character than that of the Gull-billed Tern. There is a monotonous beat or timbre to the cry

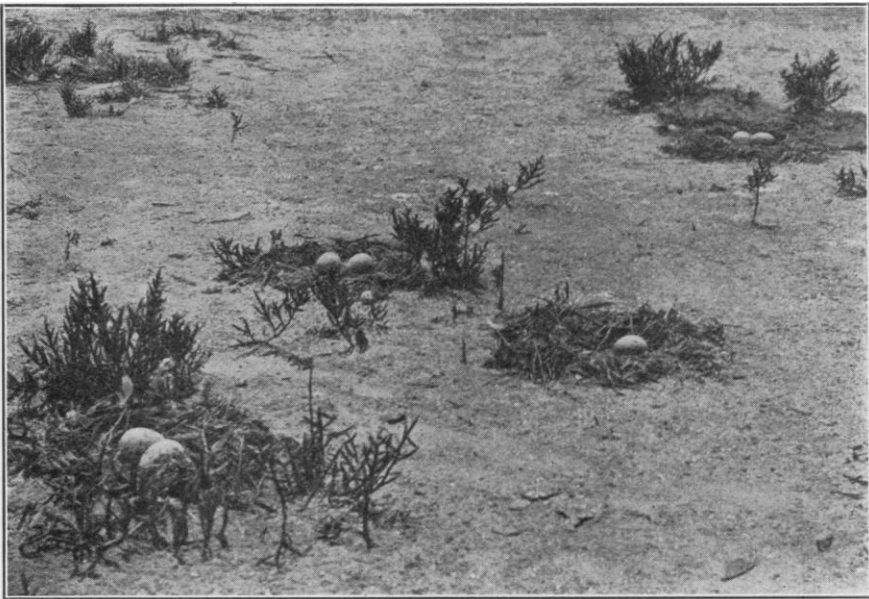


Fig. 16. PART OF THE CASPIAN TERN COLONY. CAMERON COUNTY, TEXAS.

of the bird which renders it quite distinctive to my ear. Bent describes this cry as *katydid-katydid*, and that seems to me to be a perfect rendition. The Gull-billed does not return to its nest as quickly as the Common, but beats in haphazard fashion back and forth before finally dropping. The Common Tern, quite the opposite, returns quickly to its eggs after completing its furious attacks on the intruder. The Gull-billed forages farther from home than any of the other terns. I saw individuals at Brownsville, a distance of fourteen miles, catching minnows and carrying them unswallowed back in the direction of the colony.

The eggs of the Gull-billed Tern present more variation than those of the other small terns. The usual type is a light brownish, well spotted with darker brown, the spots being large. Then there is a light bluish-gray shell with very dark brown spots; and the rarest type has a gray shell beautifully marked with

chocolate spots and blotches, and resembles eggs of the Sharp-shinned Hawk to some extent.

The Common Tern was found to nest only on the two mud islands. It was present in enormous numbers also, several thousand would be quite conservative. It selected for its nesting site the more thickly-grown grassy areas, and while it nested in some cases inside the Gull-billed area, the main colony was entirely separated from the latter. The nests were distinctively better built than those of the Gull-billed, with more grass, less mud, and a more neatly shaped cup for the eggs. Usually the nest was sheltered on one side by a sprig of salt grass. Nesting had evidently commenced simultaneously with the Gull-billed, for on May 16 all nests contained eggs and quite a few small downy young were found. The young of this species were similar in appearance to those of the Gull-billed.

Eggs were found to vary in color less than in the Gull-billed. The usual type was a greenish-olive shell with brownish and blackish spots. Some tended



Fig. 17. NEST AND SMALL YOUNG OF THE CASPIAN TERN. CAMERON COUNTY, TEXAS.

Photo by Robert Runyon.

toward a totally brown shell and some were nearly blue. The egg is smaller than that of the Gull-billed, more slender though nearly as long. All nests contained either two or three eggs and none with four were found.

We found the Common Tern to be the most pugnacious, determined and persistent fighter of them all. On the wing it was more agile and graceful, with perhaps more speed than the other small terns. It swoops closer to one's head, cries louder and oftener, and attracts more attention than the others. It also goes to the other extreme, however, in sinking more quickly and quietly to the nest, following the attack on the intruder.

Forster Tern was present in very limited numbers, perhaps less than 100. It associated with the Common Tern more than with the Gull-billed. I found the red bill to be the easiest distinguishing character in this bird. It was found nesting in an area between the main colonies of the Gull-billed and Common on the southern mud island. The nests were like those of the Common in being well built, but the bird had evidently commenced nesting later, because all eggs were fresh on May 16 and no young birds were seen. All nests contained

three eggs, and the eggs were distinguished from those of the Common Tern by the depth of green color and the numerous small black markings. This species is less demonstrative than either the Gull-billed or the Common Tern. Its voice resembles somewhat that of the Common but can easily be distinguished from it. This point marks the southern limit of the breeding range of this species.

The Least Tern was present in large numbers on two islands, the western and the northern. Why it was not present on the southern is a question, but I assume it to be because of the presence there of the vicious Caspian Tern, which here took the "place in the sun" usually occupied by some gull in other water-bird colonies. This little tern nested in a peculiar manner, all nests being strung out in a ragged line following a line of flotsam of all descriptions demarking a former high water. This line was perhaps thirty-five feet from the shore. The nests were about twenty-five feet apart and consisted solely in a slight depression in the earth which had been worn by the bird in its frequent turnings. A few had meager ornamentation in the form of some bits of broken shells placed near the nest but not arranged concentrically about it. On May



Fig. 18. EGG FIELD OF THE ROYAL AND CABOT TERNS, EGGS OF THE LATTER BEING ON THE FAR SIDE AND TO THE RIGHT OF CENTER LINE. NO EGGS OF THE CABOT TERN INSIDE THE ROYAL TERN FIELD.

16 every nest contained two eggs nearly fresh. On the 23rd no young had yet appeared, but on June 5 Mr. Camp found a few small downy young.

The Least Tern is quite alert when on the nest, leaving it to fly at the intruder long before he is near the nest. At the first cry of alarm all the terns leave their nests and flock about the cause of the disturbance; but they shortly fly back to watch over their own eggs, indicating by their hovering where their nest is. Attacks are made at one's head by the owners of the nearest nest only, adjacent nest owners taking up the fight where the others leave off, as one walks along through the colony. This bird does not like to be looked at and will maneuver so as to get in the rear before making its furious dash at one's head. The male of this graceful species has a habit of bringing small fish to the female. The male alights on the sand at some slight distance from the female and walks slowly toward her. When he reaches her he shows the fish and then encircles her several times, gently teasing her, but finally presents it to her. I saw this performance many times and never tired of watching it.

The Caspian Terns occupied only the southern mud shoal island. There were probably less than 100 pairs. They occupied a distinct area, a rather

bare strip parallel to the shore and about fifty feet from it. Nests were strung out in a loosely bound group and averaged about ten feet apart. Nests of no other species were to be found within that area. Some nests were very well made, consisting of mounds of grass and mud, well shaped, and dished at the top for the eggs. They were not high but gave the appearance of solidity and permanence. Others, especially some found by Mr. Camp on June 5, were no nests at all, the eggs being laid on the bare earth. These may well have been second layings of birds whose eggs were taken on our visits on May 16 and 23. On May 16 no young had yet appeared, although some eggs were quite well incubated. On the 23rd no young were noted, though some eggs were very far gone in incubation. On June 5 Mr. Camp found some small downy young. Most of the nests contained two eggs, but some sets of three were found.

The Caspian Tern leaves its nest silently and retires to a discreet distance from which it then watches the intruder. It was in no case found to make any demonstration or false attack on us. Its voice is a harsh *caarr* having some of the guttural quality of the squawk of the Night Heron. Caspian Terns keep to themselves in well formed flocks when not on the nests, and they apparently

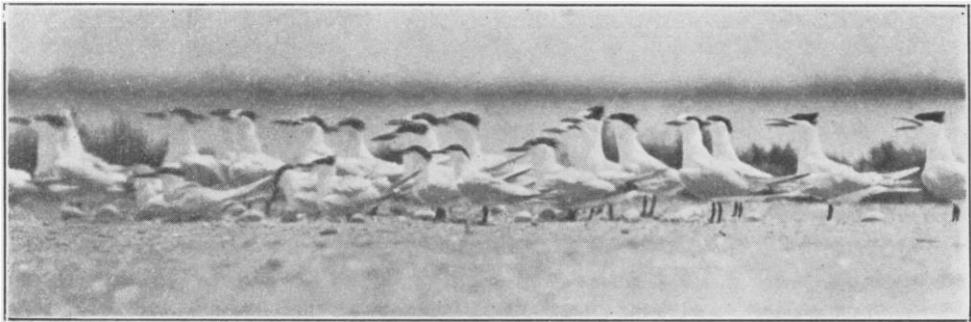


Fig. 19. ROYAL AND CABOT TERNS GUARDING THEIR EGGS. SOME OF THE CABOTS ARE SITTING BUT NONE OF THE ROYALS ARE. SAME LOCATION AS THAT SHOWN IN FIGURE 18. CAMERON COUNTY, TEXAS, MAY 16, 1921.

do not associate at all with their cousins, the Royal Terns. They are more wary than the Royal also, and good photographs could not be secured by the direct approach method.

Eggs of the Caspian Tern were found not to vary greatly. In size, shape and general type they were all the same. The ground color is dull olive gray with some life to it, the spots small, scattered and of a darker brown or lavender brown. One set has a coffee brown ground color and the markings are slender lines rather than spots, but that set is unique.

This was the only species which made any pretense of attacking its neighbors. Caspian Terns were seen time and again to dash at small downy young of the Gull-billed Tern which were running frantically across the flats away from us, snap them across the neck, back, or top of the head with the heavy bill, and leave the youngster a quivering mass, no longer a live tern. Of the two large terns, the Royal has more the look of a pirate, but apparently it is very peaceful, and, judging from its fraternal attitude toward the Cabot Tern, is the direct opposite in temperament to the Caspian.

The Royal Tern, with its satellite the Cabot Tern, was found nesting only

on the southern shoal. There were two separate egg-fields some 100 feet apart. The larger of the two was closer to the Caspian colony than any other, while the smaller was rather close to a part of the Gull-billed main colony. Each of these egg-field colonies had twenty-five pairs of Royal and fifteen pairs of Cabot terns, approximately. After seeing the laboriously constructed nests of such birds as the Verdin, the Golden-fronted Woodpecker (which in this country hews out its home from the tough pine telephone poles), and the Cactus Wren, one wonders at the reason for it all when the Royal Tern is seen to do quite as well in producing its progeny by the simple matter of laying its egg wherever it happens to be sitting last! All the eggs, as shown in the photograph, lay at an average distance apart of about eighteen inches, just a comfortable distance. The eggs of the Royal formed one continuous field, with those of the Cabot adjoining it to one side with no break in the continuity. When resting on the eggs the birds faced east and a majority of the eggs pointed west, that is, the large end toward the east. When this closely con-

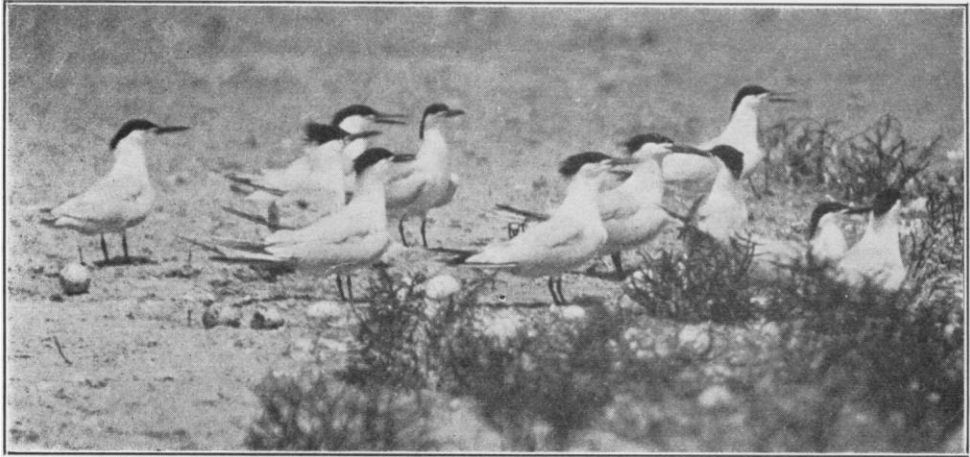


Fig. 20. THE CABOT TERNS ALLOWED OF CLOSER APPROACH DIRECTLY THAN DID ANY OF THE OTHER SPECIES.

gested colony was approached the birds raised themselves to their feet and stood, wings fluttering, crying at the tops of their voices. The Royals left the ground first when I was at a distance of seventy-five feet, but the Cabots stuck to their posts until I was closer than fifty feet. While looking the eggs over, the birds hovered overhead but made no attacks like the Common and Least terns. Very shortly after I left the egg-field the Cabots dropped onto their eggs, the Royals following soon after. All found their individual eggs with no fuss or fighting. Bent in his "Life Histories" speaks of these two species as the Damon and Pythias of the bird world and the comparison is admirable. The two species stick closely together even when on the wing, but the Royal seems to be the leader.

The eggs of the Royal Tern vary little in shape and size but in markings a great deal. Some eggs have a creamy brown shell, well spotted and blotched with dark greenish black, while others are spotless white with fine specks uni-

formly distributed over the entire shell. Only one set of two eggs was found and this may have been an accidental fusion of two adjoining nests.

The voice of the Royal Tern was not in quality distinguishable to me from that of the Caspian, being a loud, harsh, guttural *caaar*, but, as Bent says, pitched slightly higher.

On both May 16 and 23, eggs were for the most part, fresh or but slightly incubated, but on June 5 Mr. Camp found a few small downy young. Nesting must commence at the same time as with the Caspian and Cabot terns; possibly the Forster and Least should be included here too. The Gull-billed and Common get several days start on all the others.

The eggs of the Cabot Tern are to me the most beautiful of all water birds' eggs, and some of them rival the most handsome raptorial products. The variation is extensive. The ground color ranges from a beautiful, fresh salmon with a peach-like bloom to it, to pure white, and then to a peculiar greenish white, a ghastly white might be better. The markings range in size from small specks to large blotches covering a large portion of the shell, in color from

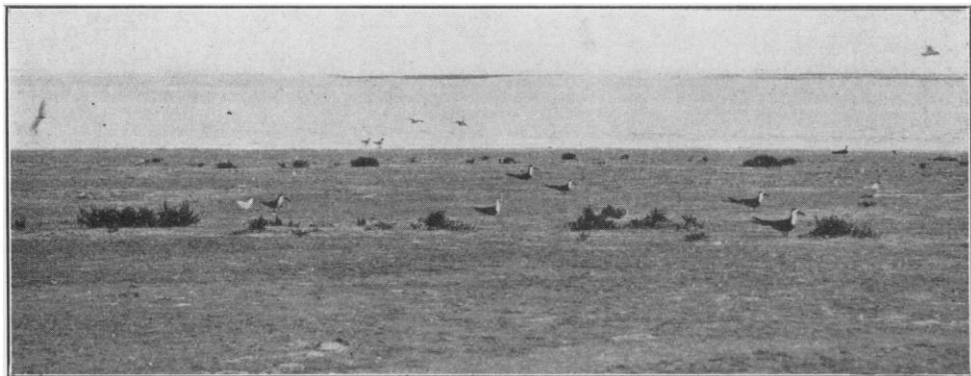


Fig. 21. BLACK SKIMMERS AND GULL-BILLED TERNS NEAR THEIR NESTS. CAMERON COUNTY, TEXAS. Photo by Robert Runyon.

brilliant black to chocolate and magenta. There is in some markings an opalescent quality, I mean a hint of several colors combined in the one as in the opal. It was a great temptation to take every Cabot Tern egg on the island, but one's blowing capacity is limited! With the exception of two sets of two eggs, all the Cabots laid a single egg. In one of the cases of two eggs I believe two singles were mixed, because the degree of incubation was very different in the two eggs, and they did not greatly resemble each other either.

The Cabot Tern has a decidedly distinctive cry, at least when excited. It is a loud *kirhitt-kirhitt*, according to Bent, and I agree with him exactly. There is a great deal of chuckling when the birds settle on the eggs after being disturbed.

Aside from the terns, several other kinds of birds were found nesting on the islands, and of these the Black Skimmer (*Rhynchops nigra*) was the most conspicuous. On May 16 they were pairing and scratching about in the earth of the western island. On the 23rd we found perhaps twenty-five nests, all containing eggs but none with the full set of four. On June 5, Mr. Camp found all the nests to contain four eggs. The Skimmers by their many peculiar

habits furnish enough material for a separate paper and I can not go into their ways here. Their nests were arranged in a row following the line of high water flotsam, as in the Least Tern, and consisted in a simple scoop in the earth made by the many wiggings of the bird when sitting.

On May 16 I found a nest of the Avocet (*Recurvirostra americana*) with four eggs ready to hatch, and this constitutes one of the most interesting breeding records for this group of islands. It has been reported as breeding once at Corpus Christi long ago; but Gulf Coast records are very scarce, for this is fully 500 miles south of the normal southern limit. Only a single pair of birds was seen and the nest was found by watching the supposed female return to the nest following a great broken-wing demonstration, which indicated plainly the presence of eggs or young birds. Mr. Camp took a second set of Avocet eggs on June 5, and I assume that they were a second laying of the same pair of birds.



Fig. 22. THE BLACK SKIMMERS FLEW UP AND DOWN THE BEACH AS LONG AS WE WERE NEAR THEIR NESTS.

Wilson Plovers (*Ochthodromus wilsonius*) were fairly common, but though evidently breeding, only one nest with two eggs was found. Mr. Kirn got this set. The nest was fairly well hidden under salt grass and located well inland from the shore of the northern mud shoal. Western Willets (*Catoptrophorus semipalmatus inornatus*) were numerous but no nests could be located. One brood of small young was found. Long-billed Curlews (*Numenius americanus*) were common on the mainland but not much in evidence on these small islands. Other water birds which visited the islands but which were not breeding there were the Roseate Spoonbill (*Ajaia ajaja*), Mexican Cormorant (*Phalacrocorax vigua mexicanus*), Reddish Egret (*Dichromanassa rufescens*), Louisiana Heron (*Hydranassa tricolor ruficollis*), Ward Heron (*Ardea herodias wardi*), and many small sandpipers which were undoubtedly migrants.

The only land bird in evidence was the Texas Horned Lark (*Otocoris alpestris giraudi*). This species evidently never strays out of sight of salt water



Fig. 23. NEST AND EGGS OF THE BLACK SKIMMER. CAMERON COUNTY, TEXAS, JUNE 5, 1921.

Photo by Robert Runyon.



Fig. 24. NEST AND EGGS OF THE AVOCET. CAMERON COUNTY, TEXAS, MAY 16, 1921.

of this Gulf Coast. I did not note it outside the limits of the salt marshes. It nests close to water, in fact four out of six nests found were on small islands and within twenty-five feet of water. Mr. Kirn found a nest with a full set of three eggs on one of these mud shoals. The nests are different from those of most of the United States horned larks in that feathers are used for lining. In the Canadian forms I believe feathers are usually included, due no doubt to general practice among birds there to circumvent the cold weather. This Texan bird uses the water-washed feathers of small sandpipers and the like, and this practice seems to me to be more instinctive than practical. It is like the use of snake skins in nests of the Crested Flycatcher. The main part of the horned lark nests consisted entirely of a fine ribbon-like sea grass which was washed up in great profusion on the beach. The grass was, of course, bleached until nearly white.

During both our visits in May we did not note any signs of coyotes. This seemed very strange to me, because the animal is really numerous everywhere on the mainland and was seen daily. It would be an easy swim to the islands, and with a great reward at the end. Rapacious birds are almost entirely absent from that region and there are no rodents on the islands. It thus looks as though (aside from minor depredations by visiting oologists, perhaps every ten years) the terns have established themselves in a very well protected breeding ground. Mr. Camp writes me that steps will be taken to officially protect the colony, in addition to the natural protection already existing.

Tulsa, Oklahoma, January 25, 1922.

NOTES ON FOX SPARROWS IN CALIFORNIA IN THE AUTUMN OF 1921

By JOSEPH MAILLIARD*

THE fall field work for 1921 in the Department of Ornithology of the California Academy of Sciences was so planned as to include further observations upon the fox sparrow group during the southerly flight from the threatening grasp of the northern winter.

As the autumn field work for the two previous seasons, carried on in the area covered by the Inner Coast Range (Condor, xxiii, 1921, p. 178), showed results that were practically similar insofar as concerned the species noted, the scene of activity for the fall of 1921 was shifted to the adjacent coast itself, that is to say, the northwest coast of California. This territory was selected principally, however, because it made possible the combination of fox sparrow work with another scheme which was in reality the main object of the expedition, the results of which will appear later in a separate paper.

It has been discovered that the subspecies of fox sparrow (*Passerella iliaca*) wintering along the coast of California in what is known as the "Humid Coast Belt" differ to a greater or less extent from those found a little farther inland at the same latitudes, but there are no published records of investigations of the conditions existing in the former territory during the migration

*Contribution no. 130 from the California Academy of Sciences.